

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1 (cancelled).

2 (currently amended). A molecular motor system comprising a nucleic acid sequence having bound thereto:

(1) at a first, proximal, region of the nucleic acid, a translocating enzyme for translocating the nucleic acid sequence ~~without causing cleavage of the nucleic acid~~, said enzyme remaining bound to said proximal region of the nucleic acid, as a complex therewith, ~~at said proximal region~~, during translocation; and

(2) at a second, distal, region of the nucleic acid, a bound substance capable of remaining bound to the nucleic acid sequence during translocation, whereby the bound substance becomes translocated, relative to the region of binding of the enzyme to the nucleic acid sequence, as a result of the translocation of the nucleic acid to which it is bound;

wherein the enzyme remains fixed to the nucleic acid at the original binding site throughout translocation, the system operating in a manner such that cleavage of the nucleic acid does not occur.

3 (original). A system according to Claim 2, wherein the nucleic acid sequence comprises a circular or linear DNA sequence.

4 (original). A system according to Claim 2, wherein the enzyme comprises a type I restriction-modification enzyme having HsdR, HsdS and HsdM sub-units.

5. (original) A system according to Claim 4, wherein the enzyme comprises a type IC restriction-modification enzyme and exhibits the stoichiometric form $\text{HsdR}_1\text{M}_2\text{S}_1$.

6 (original). A system according to Claim 4, wherein the HsdR sub-unit is that of the type IC restriction-modification enzyme *Ecoprrl* or a mutant of said HsdR sub-unit which imparts to the enzyme the property of translocating a nucleic acid sequence without causing cleavage thereof, and without loss of ATPase activity.

7 (currently amended). A system according to Claim 2, wherein the bound substance comprises a binding ligand that can bind to a ~~substance~~ material in solution.

8 (original). A system according to Claim 2, wherein the nucleic acid is attached to a solid support.

9 (original). A system according to Claim 7, wherein the nucleic acid is linear, thus having two ends, the bound substance being bound at one end and a solid support being bound at the other end.

10. (currently amended). A system according to Claim 2, wherein the

means of attachment between the nucleic acid/enzyme complex and a ~~substance~~
material which is required to be translocated is direct or indirect.

11 (currently amended). A system according to Claim 7, wherein the bound substance comprises one or more of:

- (a) a binding ligand for binding a ~~substance~~ material in solution, suspension or dispersion;
- (b) an enzyme which produces chemiluminescence;
- (c) a magnetic ~~substance~~ material;
- (d) a DNA sequence;
- (e) a scintillant;
- (f) a radioactive ~~substance~~ material;
- (g) a ~~substance~~ material capable of producing an electric current;
- (h) a ~~substance~~ material capable of movement or resulting in movement;
- (i) a ~~substance~~ material capable of interacting with the environment of the system to produce a detectable and/or measurable effect; and/or
- (j) biotin, streptavidin or avidin.

12 (currently amended). A molecular motor system comprising a nucleic acid sequence having bound thereto:

- (1) a translocating enzyme for translocating the nucleic acid sequence ~~without causing cleavage of the nucleic acid~~, said enzyme remaining bound to the nucleic acid, as a complex therewith, at ~~said~~ a proximal region of said nucleic acid, during

translocation; and

(2) a solid support;

wherein the enzyme remains fixed to the nucleic acid at the original binding site throughout translocation, the system operating in a manner such that cleavage of the nucleic acid does not occur.

13 (original). A molecular motor system according to Claim 12, wherein the enzyme comprises a type I restriction-modification enzyme having HsdR, HsdS and HsdM sub-units.

14 (original). A molecular motor system according to Claim 13, wherein the enzyme comprises a type IC restriction-modification enzyme and exhibits the stoichiometric form $\text{HsdR}_1\text{M}_2\text{S}_1$.

15 (original). A molecular motor system according to Claim 13, wherein the HsdR sub-unit is that of the type IC restriction-modification enzyme *Ecoprrl* or a mutant of said HsdR sub-unit which imparts to the enzyme the property of translocating a nucleic acid sequence without causing cleavage thereof, and without loss of ATPase activity.

16-28 (cancelled).

29 (previously presented). A system according to Claim 8, wherein the means of

attachment between the nucleic acid/enzyme complex and the solid support is direct or indirect.

30 (currently amended). A system according to Claim 10 wherein the bound substance is ~~the substance~~ a material which is required to be translocated.

31 (currently amended). A system according to Claim 10 wherein the bound substance is ~~a linker~~ capable of becoming bound to a ~~substance~~ material which is required to be translocated.

32 (currently amended). A system according to Claim 10 wherein the bound substance is ~~a linker~~ combined with ~~the substance~~ a material which is required to be translocated.